

Application No. 10/710,636

Response to Office Action of July 3, 2007

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:

Serena Giori

Claudio Giori

Application No. 10/710,636

Confirmation # 4635

Filed: July 26, 2004

Art Unit: 1772

For: Self-Cooling Beverage Container  
With Permeable Wall

Examiner: Bruenjes, Christopher P

**DECLARATION UNDER 37 CFR §1.132**

We, Serena Giori and Claudio Giori, declare and say:

That we are citizens of the US and reside at 2975 Orange Brace Rd, Riverwoods, IL 60015, that we are the inventors in the above-identified patent application, that we are familiar with the Nomi and the Johnson references cited by the Examiner, that we ran comparative tests to evaluate the performance of the non-porous membrane of this invention relative to the prior art microporous material, and that the materials used, procedures followed, results obtained and performance advantages are as given below:

***Comparative test results illustrating unexpected superior performance relative to prior art***

***Materials tested***

***Material representative of present invention:*** non-porous polyether-based polyurethane (PU) membrane laminated to a synthetic fabric. Laminate obtained from Uretek Inc, New Haven, CT, product code 4048.

***Material representative of prior art:*** GORE™ microporous PTFE (polytetrafluoroethylene) membrane laminated to a synthetic fabric. Laminate obtained from WL Gore & Associates, Inc, Elkton, MD, product code B024454176, membrane pore size, 3.0 micron. This membrane is representative of prior art because it is made of microporous PTFE which is the preferred prior art material (Nomi, US 4,368,766 col 2, line 1-2) and because its pore size is in the middle of the prior art preferred range of 0.1 to 5 micron (Nomi, US 4,368,766, col 3, line 37-38).

***Non-breathable control material:*** low density polyethylene (LDPE) film, 2 mil thick.

***Bag assembly methods***

Sample bags were made with the membrane material facing the inside of the bag. Sample bags from the polyurethane laminate and from polyethylene film were made by heat sealing two sheets along the peripheral edge. Sample bags from the PTFE laminate were made by adhesive bonding (PTFE is not receptive to heat sealing). Approximately ¼ in along the perimeter of each sheet was first treated on the PTFE side with an etching solution (Chemgrip® treating agent, Norton Performance Plastics), a thin layer of Norton's Chemgrip® epoxy adhesive was then applied to the treated edges, and the two sheets were then pressed together and intimate contact maintained during cure.

***Test procedure***

Bags from each of the three materials were filled with the same volume of water and hung in a room maintained in a narrow range of temperature and humidity as shown in the table below. The air was still. The test was conducted over a three day period. The temperature of the water in each bag was measured after ½ hr and every 24 hrs thereafter. Every 24 hrs, after checking water temperature, water was added to each bag to compensate for evaporative losses and to bring the volume back to the initial level.

***Test results***

*The cooling effect and the water loss observed over a 3-day period with the two types of membranes and control LDPE film are shown in the table below.*

<i>Time and Conditions</i>			<i>Bag Construction Material</i>					
			<i>Non-porous PU membrane / fabric laminate</i>		<i>Microporous PTFE membrane / fabric laminate</i>		<i>Control LDPE film</i>	
<i>Hours</i>	<i>Ambient temp, °F</i>	<i>Ambient humidity, % RH</i>	<i>Water temp, °F</i>	<i>Daily water loss, %</i>	<i>Water temp, °F</i>	<i>Daily water loss, %</i>	<i>Water temp, °F</i>	<i>Daily water loss, %</i>
1/2	77	67	71.5	-	72	-	77	-
24	75	69	71	22	71	61	75.5	-
48	79	66	74	23	73.5	60	79	-
72	76	68	72	22	72	50	76.5	-

### **Observations**

- 1. The cooling efficiency of the non-porous PU and microporous PTFE bags is essentially the same, as indicated by the fact that they exhibited virtually identical water temperature during the course of the test.*
- 2. The rate of water loss of the microporous PTFE bag is substantially higher than the rate of water loss of the non-porous PU bag. The rate of water loss of the microporous PTFE bag drops somewhat after 48 hrs, presumably because of some compaction or clogging of the pores, but remains much greater than the rate of water loss of the non-porous PU bag.*
- 3. There is virtually no temperature change or water loss with the control LDPE bag.*

### **Unexpected Performance Advantages**

*The undesirably high rate of water loss exhibited by the microporous PTFE bag relative to the non-porous PU bag is surprising, in view of the fact that the PTFE bag used for the test is representative of the best prior art available in terms of both material of construction and pore size. What is even more surprising is the fact that the cooling efficiency of the microporous PTFE bag is the same as that of the non-porous bag, in spite of its higher water loss which would be expected to result in greater evaporative cooling. Thus, the non-porous bag exhibits unexpected superior performance, as it provides the same cooling effect as the microporous bag with substantially lower water loss.*

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We further say that in our opinion the unexpected superior performance relative to the prior art is relevant as objective evidence of non-obviousness (MPEP §716.02).

We further say that all statements made therein of our own knowledge are true and that all statements made on information and belief are believed to be true, that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 USC 1001), and may jeopardize the validity of the application or any patents issuing thereon.

Further declarants say not.

Date: September 19, 2007

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